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NEWS

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*****Researchers to perform tests
on woman with thermoregulatory disorder.

DALLAS--A 42-year-old woman who seems to have extreme temperature fluctuations will be tested this week by doctors at The University of Texas Health Science Center at Dallas.

Dr. James Lipton, professor in the Department of Physiology at U.T. Southwestern Medical School, will attempt to document whether the patient's body has any of the normal mechanisms for regulating body temperature. Working with Lipton will be Dr. Adolph Giesecke, chairman of the Department of Anesthesiology, and Dr. Yaw Safo, instructor in Anesthesiology.

Reports from the patient's husband and physicians say they have observed marked dysthermia (poor temperature regulation by the body in hot and cold environments). Her husband describes a 20 degree range, in which the patient's temperature varies from 88 degrees to 108 degrees. Walking in the sun can cause her temperature to rise rapidly, according to her husband, while she is unaware of temperature changes. Her lack of control can cause life-threatening complications.

"The cold temperatures are not much of a problem, but when a person's core temperature exceeds 106 degrees, temperature regulation normally fails and becomes scrambled. One may even see shivering," says Lipton.

The woman, Mrs. Marcia Cates of Chatham, Va., may be "poikilothermic," that is her body temperature may vary with the environment, similar to that of a cold-blooded animal. Up until now there has been no systematic study of the woman's disorder under controlled conditions.

If reports about her disorder can be documented, the patient may be the most dysthermic ambulatory patient yet observed, says Lipton. Lipton has been testing patients with temperature disorders for 10 years.

The primary aim of the testing is to reach a better understanding of how the central nervous system controls body temperature, says Lipton.

Mrs. Cates will enter a research center supported by grants from the Division of Research Resources, National Institutes of Health. This General Clinical Research Center is a separate hospital within Parkland Memorial Hospital and is operated by UTHSCD. There is no charge for patients selected to the GCRC.

The patient's condition is related to an aneurism that ruptured in 1980. The aneurism (a weak place on a blood vessel that eventually balloons with blood and often explodes if not removed in time) involved the anterior communicating artery in the brain. During neurosurgery the aneurism broke before it could be clipped, resulting in several symptoms of blood starvation in the hypothalamus. Following were a number of symptoms, including seizures now controllable with medication. Today, the most persistent symptom seems to be dysthermia.

Normally the body works to keep a narrow range of body temperature. Average temperature is 98.6 degrees Fahrenheit while temperature fluctuates about two degrees over one day. The body's temperature is held in check by heat and cold sensitive cells in the skin, deep body organs and the hypothalamus in the brain. The hypothalamus acts as a computer to integrate

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information from the blood, skin and deep organs. This orchestration provides changes in the diameter of blood vessels--the way we normally regulate temperature. Blood is shunted to the skin surface when the body is trying to lose heat and surface vessels constrict to form a shell around the body in response to cold.

With exposure to temperature extremes, shivers may be required to get temperature up, or sweating, to get temperature down. As temperature controls start to occur, there is a feeling of discomfort in normals, says Lipton. Thermoregulatory responses generally decrease with age, however.

An infection causes body temperature to rise, producing a fever through the release of pyrogens. White blood cells interact with the invaders causing the infection and at the same time produce pyrogens. The pyrogens circulate, acting on brain cells to produce the fever.

While the hypothalamus can offer precise temperature control, there are less precise controls found in the spinal cord and lower brain stem.

"We want to see if there are still ancient mechanisms for control within her brainstem. There should be some point where she will shiver or complain of being cold or begin sweating from heat," says Lipton.

The patient's temperature will be subject to intense observation during her entire stay at the health science center. Rectal and skin temperatures will be recorded continuously. She will be given pyrogens, fever-producing solutions, to determine if there is a fever response.

She will be placed between thermal blankets to alter heat and cold. The blankets are filled with circulating water and will aid in determining her broad band of control. "We want to see if her physiological and behavioral thermoregulatory responses are present at extreme temperatures."

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